Space Weather Forecast

Issued on Saturday, 17 August 2024 at 01:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor/Moderate G1/2 geomagnetic storm likely in UTC day of Saturday 17 August. R1/R2 Minor/Moderate radio blackouts expected throughout, slight chance R3 'strong'.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate, with a Moderate flare at 16/1324UTC from the southwest limb. There are up to 13 sunspot regions on the visible disc. The largest spot resides in the northwestern quadrant, which remains significantly complex. A large spot on the southwest limb is now only partially visible, therefore it's previously large and complex classification is preserved. Otherwise most other spots are small and simplifying, with only a few moderately sized exceptions with proliferation of intermediate spots.

Although several coronal mass ejections have been observed leaving the sun in the period, after analysis, none have been deemed to be Earth-directed.

Solar Wind / Geomagnetic Activity: Solar winds were reflective of a slow regime. The solar wind speed was slow-ambient. The Interplanetary Magnetic Field was weak, while the north-south component moved from mostly negative to mostly positive but remained weak. The net result of the above solar wind measures was Quiet to Unsettled (Kp 1-3) geomagnetic indices.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is Expected, with a daily Slight Chance of isolated Strong class flares, mostly from the large and complex spot in the northwest. This risk is judged constant throughout, with significant departing regions on the southwest limb perhaps in some way compensated for by the weight of numbers of east limb arrivals.

Solar Wind /Geomagnetic Activity: A faint coronal mass ejection occurred due to a strong flare at 14/0640UTC, and is forecast to arrive at Earth day 1 (Saturday 17 August). The strength of this is low confidence, with the main geomagnetic activity likely with any subsequent magnetic cloud. This has the potential to be further enhanced by a northern directed coronal hole fast wind. Mainly Quiet geomagnetic activity is therefore expected at first, giving way to Likely G1/G2 Minor to Moderate Storm on day 1 (Saturday 17 August) due to the coronal mass ejection arrival. There is a Slight Chance of this event reaching G3 Strong (Kp 7) Storm. Activity should then revert to Quiet over the course of day 2 (Sunday 18 August).

Energetic Particles / Solar Radiation: No solar radiation storms are expected, however there is a Chance of breaching S1 Minor solar radiation storm level should any notable flares occur from either of the large spots on or approaching the western limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	70	40	1	1
Strong	G3	No	15	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	80	80	80	80
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	5	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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